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Changing epistemological paradigms – *Dimensions of knowing*

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My background is in teacher education. I do have a loose connection to medical education insofar as I have been a GP Practice Manager in a former life and, as a lecturer originally in Further Education (and many years ago), I taught medical terminology and was part of the Glasgow Overseas Professionals into Practice (GOPIP) project - supporting overseas-trained medics to transition into NHS roles. My contribution to this symposium concerns two themes that are common to teacher- and medical-education: practice and conceptualisation.

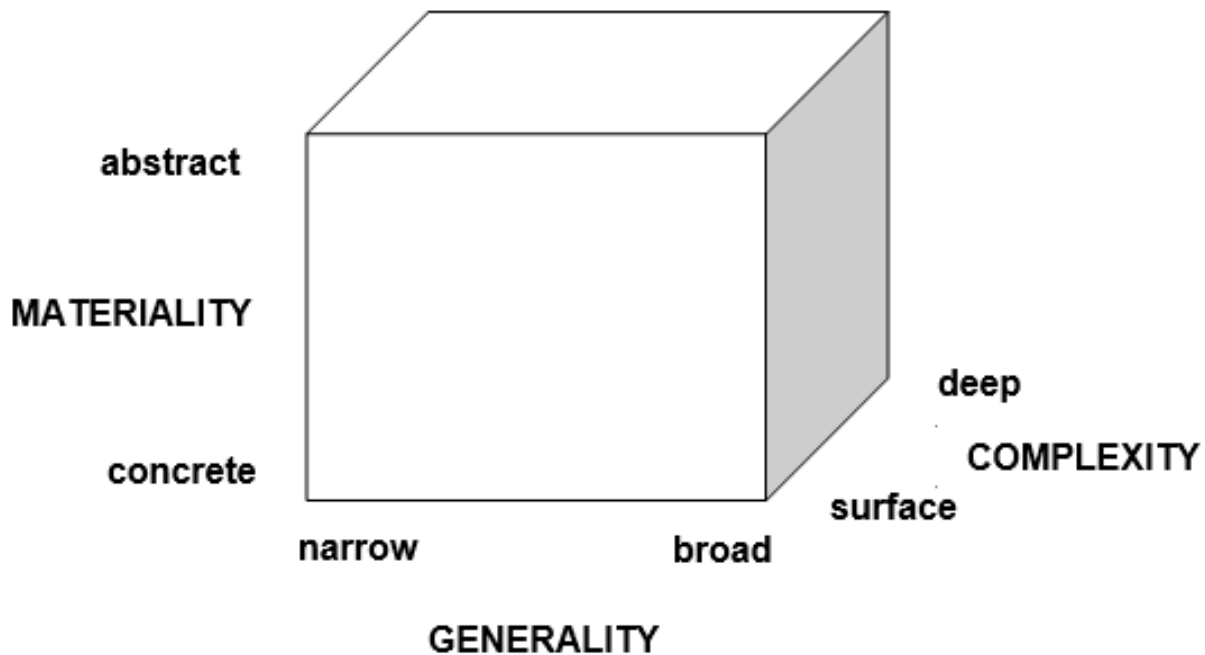
My research interests include epistemology – “the theory of knowledge”. In researching the epistemological traditions of initial teacher education I developed an interest in the discourses of what had emerged, in my view, as an unhelpful opposition between knowledge and skills.

In my doctoral research, I had explored the issue of a knowledge/skill (or academic/vocational) divide within the English Further Education sector, and developed an argument against polarity. I presented a new argument (Rand 2009; 2011), in three parts:

- i. that knowledge relates to understanding on a continuum between practical (or ‘applied’) and theoretical (or ‘pure’);
- ii. that an individual’s power or capacity to engage with and/or employ knowledge is referred to as their *skill*;
- iii. that the process we call *learning* involves gaining ‘knowledge of or skill in’ something by ‘study, experience or being taught’ (Thompson, 1996: 564).

And so, I developed an argument for complementarity – for *knowledge of* and *skills in* to be considered as interconnected, dynamic, mutually sustaining and developmental (Rand, 2011). As a result I developed a conceptual model, *Dimensions of knowing* (Rand, 2011), designed to promote an alternative to a binary knowledge/skill conceptualisation.

Dimensions of knowing is based on three dimensions of generality (or width), complexity (or depth) and materiality. I needed a very straightforward way to share my thinking. I chose an easily recognisable three-dimensional shape: a cube.



Dimensions of knowing #3 © Rand, 2011 & 2015

The key features of *Dimensions of knowing* are that:

- *knowledge of* can be considered through the two dimensions of generality (width) and complexity (depth)
- *skills in* can be considered through the dimension of *materiality* – as outputs, or knowledge states on a continuum between material and immaterial (physical and mental)
- the interconnected, dynamic and mutually sustaining relationship(s) between the three dimensions of generality, complexity and materiality can be conceptualised as a *portrait of knowing*, or what Claxton (2006: 4-5) calls an 'epistemic identity'; considered by one student teacher to be "like the lava in a lava lamp".

(After Rand, 2009, 2011, 2015, 2016)

Dimensions of knowing is underpinned by the principle that binaries describe perceptual limits, or the points beyond which something does *not* continue (Mezirow, 1981:16; emphasis added) and that, in reality, people make 'practical and theoretical sense of the world' through focussing on the spaces *in between* rather than the binaries themselves (Anderson, 2002: 308-9). This allows for positions that

are 'flexible and tentative' rather than fixed. Such an 'interpretive dualism' (Soja, 1996: 5), discourages one side to be valued over the other (Pile, 1994).

The 21st Century educational model requires a pedagogy (the method and practice of teaching) that Eneroth (2008) calls 'handiwork', or circumstantial – where ways of thinking *and* practising are valued. Absolute binaries, or 'sharp dichotomies' (Coffield, 2000) conflict with this; they can hide the *practice* of learning (Whitchurch, 2010). A connective, relational epistemology allows for the development of 'new relationships between theory and practice' (Young et al., 1997: 532) ...for recognition of the *art* of being an educator.

A connective epistemology prioritises sense-making, over acquisition (Bloemer and Hodgkinson, 2000). This is important for both teacher education and medical education because those with whom we engage need to be able to make sense, rather than simply 'acquire'; be they training teachers, training medics, learners or patients. In my particular research, I wanted to find out how those who were new to Further Education teaching thought about knowledge and knowing. We explored this together through discussing 'experienced problems', for example, how to help a 'learner' understand a 'subject'. Substitute 'learner' for 'patient' and the subject for 'a diagnosis' or 'a treatment plan' and the connections between initial teacher education and medical education are straightforward.

What I found in my research was that student teachers' thinking *was* dominated by a theory/practice dualism. However, I also found that student teachers could successfully conceptualise *knowledge of* and *skills in* as interconnected, dynamic, mutually sustaining and developmental when the *Dimensions of knowing* model was used to support an interruption of their habituated views (Martin, 1997).

As an alternative to conceptualising the knowledge they held as something to be 'acquired' by learners, *Dimensions of knowing* enabled colleagues to envision how learners could 'make sense', by first understanding their learners' *portrait(s) of knowing* and then by choosing the best pedagogical approach to help them develop.

As Roy suggested (Figure 1), a learner's epistemic identity may constitute disparate 'blobs' at the beginning of a Unit, which become connected by the end of the period of study:

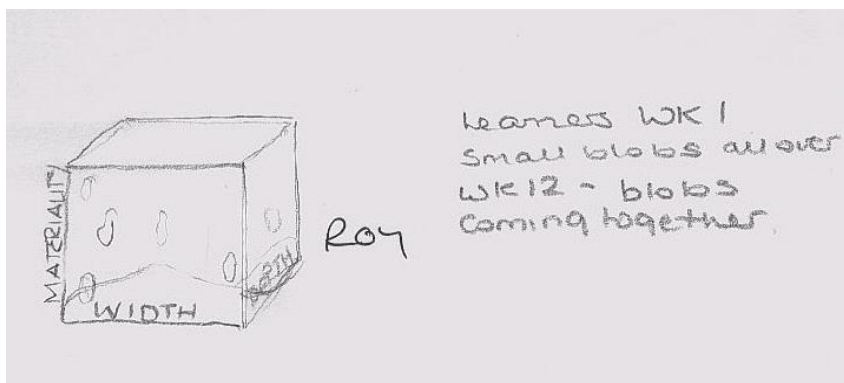


Figure 1: example of a portrait of knowing (Roy).

And for Tess (Figure 2), who taught computer programming, there was opportunity to develop *Dimensions of knowing* to support both teaching and learning, through the concept of epistemic identity as a 'learner spider':

[I] Would create a 3D cube in software (or C++programming). 1 x point on each axis creating a central point, create a sphere emanating [sic] from this point to demonstrate a learner's size of knowledge. There will be 'spikes' therefore the shape would be a learner 'spider' with different length legs. A learner's goal would be to fill the course "knowledge cube" and conclude with a "fatter" spider. I could use a cube for each unit rather than for the whole curriculum. [It] Explains knowledge gained for learners...[and] distance travelled can be expressed graphically...

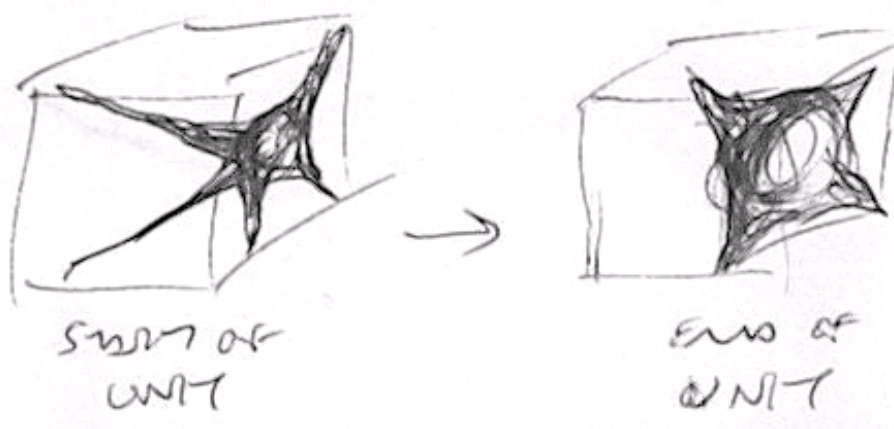


Figure 2: Examples of portraits of know – Tess (Rand, 2015: 153)

This symposium identifies synergies in practice. *Dimensions of knowing* has proved to be of interest to colleagues in education whenever I share it, if for no other reason than it presents an alternative to an either/or way of thinking. Last year I presented it to a group of PhD students at my own University. One of them spoke with me after the session to say that she could see how to use the model to help her conceptualise her own understanding of the educational topic she is currently researching. *In addition*, she said that she had used it to conceptualise her understanding of her own recent diagnosis of Multiple Sclerosis. It had helped her, she said, to recognise that her skills in responding to the diagnosis (which she described as 'blunt', and largely abstract) were intricately connected to the depth and breadth of her knowledge of MS (which was largely surface-level, and made up of lots of small 'snippets'). The model had helped her to make [some more] sense of her understanding of a diagnosis that she had recently 'acquired'. So I offer *Dimensions of knowing* today as a model with the potential to inform both medical education and those who medical professionals engage with, as it does teacher education and those who teaching professionals engage with.

Thankyou.

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